Centrify Mobile Authentication Services

SDK Quick Start Guide

7 November 2013

Centrify Corporation

Legal notice

Revision history

This table summarizes the changes that have been made to this document with each revision.

Date	Notes
11 September 2013	First draft.
24 September 2013	Added an introduction.

Contents

Introduction

The Centrify mobile application provides single sign-on (SSO) services on Android and iOS mobile devices through Centrify Cloud Service and communication with an Active Directory infrastructure.

This single sign-on solution addresses password proliferation by providing users with a single sign-on while also giving organizations centralized control over access to web-based and mobile applications. Users not only enjoy single sign-on but also self-service features that let them locate, lock, or wipe their mobile devices and reset their Active Directory passwords. Centrify Cloud Service delivers access control and visibility to application use in addition to seamless integration with Microsoft Active Directory. Centrify Cloud Service single sign-on decreases the cost of rolling out and managing web-based and mobile applications while improving user adoption, satisfaction, security and productivity.

Centrify SSO enhances the user's experience and improves security

Employees of a large organization typically have to use several web-based and mobile applications on a daily basis, such as file-sharing applications, business-networking applications, email, and so forth. Whether they access the applications through a web browser or through applications on a mobile device, they normally have to provide a username and password for each application, each time they open the application. Because it's difficult to remember a large number of passwords, users often use one or a small set of passwords for all the applications they need to use. If one of those applications has a security vulnerability and a user's password is compromised, a malicious hacker might gain access to all of the employee's data in all of the applications that employee uses.

Centrify Cloud Service provides authentication using industry-standard certificate-based security and the organization's Active Directory service. For SaaS applications, the organization provides users with the MyCentrify portal through which they can access all the applications with which the organization has an account. The user logs in once with his or her Active Directory credentials to gain access to all the SaaS applications that use Security Assertion Markup Language (SAML) protocol to authenticate users. For mobile applications that use the Centrify API to get SSO through Centrify Cloud Service, a similar situation applies: once the user has registered the device with Centrify Cloud Service, he or she has access to every such SSO application on the device. Most such mobile applications have a web service providing data in the background, and the SSO extends to the web service without any additional credentials from the user.

Use the MAS API to add SSO to mobile applications

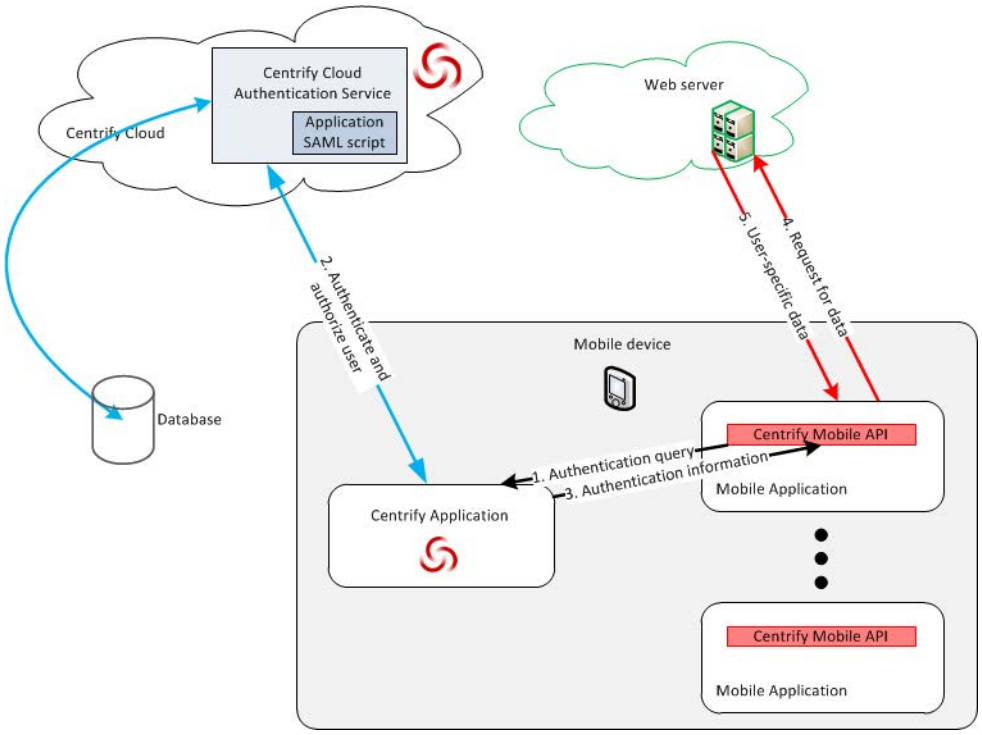
Mobile applications can use the Centrify Mobile Authentication Service (MAS) APIs to authenticate with Centrify Cloud Service.

On an Android or iOS device, the user installs the Centrify application to obtain access to Centrify Cloud Service. The Centrify application establishes a certificate-based trust relationship with Centrify Cloud Service. The first time the user opens the Centrify application or any other application on the device uses the MAS API to authenticate the user, Centrify Cloud Service prompts the user for Active Directory credentials, authenticates the user of the device, validates that the user has a current Active Directory account, and looks up the user's roles to determine which applications the user is allowed to run. After that, whenever an application calls the MAS API, the Centrify application provides the user's authentication information. The Centrify application uses the trust relationship it has established with Centrify Cloud Service to get Active Directory and authentication information without any further interaction with the user. The user experience can be described as "zero sign-on" since, after initial enrollment, the user is never required to enter credentials.

Centrify Cloud Service and the Centrify MAS APIs use SAML to authenticate users. The authentication token returned by Centrify Cloud Service to the application is a SAML response. However, because the MAS APIs take care of validating and parsing the token, you do not need to know anything about SAML to implement SSO using the MAS APIs.

The MAS APIs provide general information about the user read by Centrify Cloud Service from the user's Active Directory entry, such as the login user name, the user's address and telephone number, and their email address. If you need other attributes from Active Directory, you can add them to the authentication token using an application-specific SAML script run by Centrify Cloud Service when the user first opens the mobile application. The script is created by the administrator when configuring the Generic SAML template in Centrify Cloud Manager for the application. See *Centrify Mobile Authentication Services SDK Implementation Guide* for instructions on using the Generic SAML template.

When the login sequence is initiated by the user opening a mobile application, the sequence of events is as shown in the following figure.



When the user installs and starts up a mobile application that uses the Centrify MAS API, Centrify Cloud Service requests Active Directory credentials from the user and uses them to authenticate and authorize the user. After that the device is recognized by Centrify Cloud Service.

1. The user opens the mobile application and the application requests authentication information using the MAS API.
2. This information might be cached, but if the cached information has expired, the Centrify application contacts Centrify Cloud Service to obtain it using the certificate-based trust relationship set up earlier. In either case, the process is invisible to the user.

   Note In order for Centrify Cloud Service to generate an authentication token, an administrator must use Centrify Cloud Manager to create and configure an application-specific SAML application profile and script. See *Centrify Mobile Authentication Services SDK Implementation Guide* for instructions on configuring a SAML application profile.
3. The Centrify application returns the information, including the authentication token if requested, to the application.
4. The application passes the authentication token to its web service and requests resources for the user.
5. The application's web service uses the token to authenticate the user and returns the user's data for the application to display.

   The user can now use the mobile application.

Developing with the Centrify MAS API

This guide shows you how to quickly start development with the Centrify Mobile Authentication Service (MAS) API to create a mobile application designed to run on an Android or iOS mobile device.

The Centrify MAS API is specifically designed to provide single-sign-on (SSO) capabilities to applications runningon an Android or iOS mobile device. The Centrify application on the device authenticates the user through Centrify Cloud Services and, after that, the user does not need to provide credentials in order to use any of the SSO applications.

Refer to *Centrify Mobile Authentication Services SDK Implementation Guide* to understand the roles of the MAS API, Centrify Cloud Service, the Centrify application, other mobile applications, and SaaS applications.

Contents of the MAS SDK package

The Android MAS SDK is packaged in the `Android` folder in the `centrify-cloud-SDK` zip file.

See the ReadMe file included in the `Android` folder for an up-to-date enumeration of the files in the SDK. As of the time of this writing, in addition to the ReadMe file, the SDK package contains three folders:

- `centrifyauth2-1.0-SNAPSHOT.jar`: The Centrify MAS SDK library.
- `javadoc`: A folder containing Javadoc documentation for the API. *Centrify Mobile Authentication Services SDK Implementation Guide* also has documentation for the API; see the chapter "Mobile Authentication Service Android Reference."
- `samples`: A folder containing the following:
  - `GenericSSODemo1.apk`: A demo app.
  - `GenericSSODemo2.apk`: A demo app.
  - `GenericSSODemo1`: A folder containing source code for `GenericSSODemo1.apk`.

The iOS MAS SDK is packaged in the `iOS` folder in the `centrify-cloud-SDK` zip file.

See the ReadMe file included in the `iOS` folder for an up-to-date enumeration of the files in the SDK. As of the time of this writing, in addition to the ReadMe file, the SDK package contains three folders:

- `Libs`: The Centrify MAS framework header files.

- `Doc`: A folder containing documentation for the API. *Centrify Mobile Authentication Services SDK Implementation Guide* also has documentation for the API; see the chapter "Mobile Authentication Service iOS Reference."
- `Samples`: A folder containing source code and the Xcode project for the `CentrifySDKSample` sample app.

Prepare for development

1. Go to https://www.centrify.com/cloud/cloud-service-registration.asp and follow all the steps to register for Centrify Cloud Service and install the Centrify Cloud Proxy Server.

   When you register, Centrify Cloud Service displays a window with a customer ID and proxy activation code. Make a note of the ID and copy the activation code to your clipboard.

2. Connect your production or test Active Directory environment to Centrify Cloud Service as instructed at https://www.centrify.com/cloud/cloud-service-registration.asp.

3. Open Cloud Manager at https://cloud.centrify.com/manage. You need the `sdkdemo` test application in Cloud Manager (necessary for the sample applications to work):
   a. Click **Add App**.
   b. Search for the `sdkdemo` application in the Select Applications dialog, select it and click **Add Apps**.
   c. Follow the directions in the online help to configure the application.

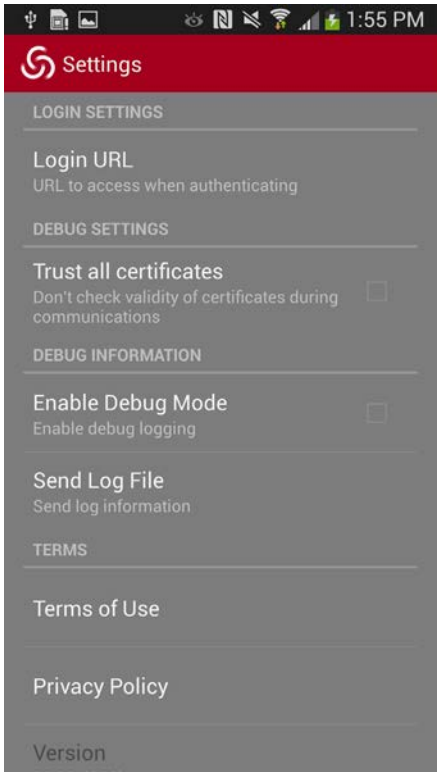
Install and configure the Centrify application

The Centrify application can be run on any mobile device running Android 2.3 or later or iOS 6 or later. The Centrify application must be version 13.10 or later.

1. Download the Centrify application from Google Play or the Apple App Store and install it on the mobile device.

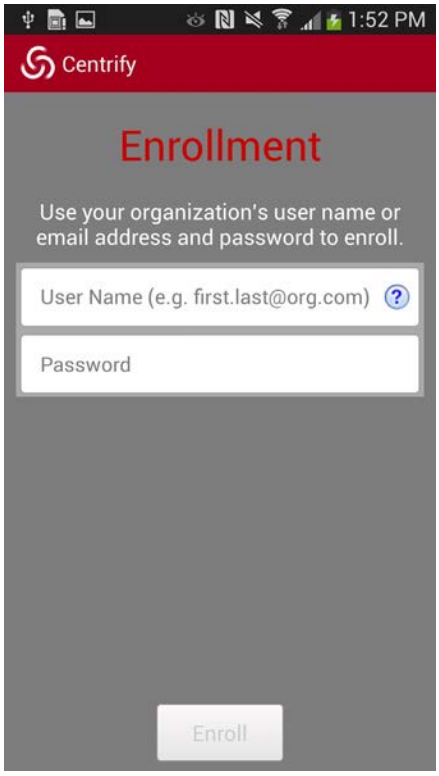
2 Launch the Centrify app and, under **Settings**, make sure the login URL is set to `https://cloud.centrify.com`. Click **Enable Debug Mode**.

Figure 1. Centrify app settings



3 On the Enrollment screen, enter the Active Directory credentials for the user allowed to register the mobile device with Centrify Cloud Service.

Figure 2. Log in with Centrify app



Install and run the demo application

The demo applications can be tested on any mobile device running Android 2.3 or later or iOS 6 or later.

1 For Android, install the `GenericSSODemo1.apk` sample application on the Android device. For iOS, install the `CentrifySDKSample` sample app on the iOS device or use the emulator in Xcode.

Note Android program (apk) files can be installed on both devices and emulators using adb tools, which are part of the Android SDK. For more details, refer to http://developer.android.com/sdk/index.html.

For details on how to test an iOS app on a device, refer to https://developer.apple.com/library/mac/documentation/IDEs/Conceptual/AppDistributionGuide/TestingYouriOSApp/TestingYouriOSApp.html.

2 Launch the sample application.

3 Try the buttons in the sample application to see the information returned by Centrify Cloud Service.

4 Close the sample application and reopen it. You should not have to enter credentials again.

Create a SAML application profile in Centrify Cloud Manager

You need to add an application profile for your mobile application so that it will appear in the list of available applications in MyCentrify. In addition, you need to add a SAML application profile for your back-end SaaS application so that Centrify Cloud Services can generate the authentication token needed by the SAML interface.

1 Open Centrify Cloud Manager and click **Add App** on the **Apps** page.

2 Enter Android in the search field. Select the Android InHouse template, and click **Add App**.

3 Click `Edit` and enter a name, description, and icon for your mobile application. Click **Save**.

4 Click **Add App** and enter Generic in the search field. Select the Generic SAML template and click **Add App**.

5 Follow the online help instructions and the instructions in the chapter "Creating a SAML application profile" of the *Centrify Mobile Authentication Services SDK Implementation Guide* to fill in the template for the back-end web service that works with your mobile application.

Use the sample project to write your application

1 Open the source code for the sample application (`GenericSSODemo1` for Android, `CentrifySDKSample` for iOS).

2 Find the `getSecurityToken` call in the file `SalesRecordsActivity.java`. This method retrieves the authentication token for the application. For example:

```
try {
    String target = Preferences.getTarget(SalesRecordsActivity.this)
    samlToken = EnterpriseAuthentication.getSecurityToken(target, false,
        SalesRecordsActivity.this)
    if (samlToken == null || samlToken.length() == 0) {
        Toast.makeText(SalesRecordsActivity.this,
            "No saml token found", Toast.LENGTH_SHORT).show();
        return null;
    }

    publishProgress("Auth token obtained...");
}
```

In the sample application, the application name (`target`) passed to the `getSecurityToken` method is `"sdkdemo"`, as defined in the file `Preferences.java`. This call will work only if you have an application named sdkdemo in Centrify Cloud Manager

created using the Generic SAML template. Centrify Cloud Services uses the SAML script specified in the Generic SAML template to generate the token.

For iOS, find the `getSecurityTokenForTarget:` call in the files `AppDelegate.m` and `HomeViewController.m`. This method retrieves the authentication token for the application. For example:

```
- (IBAction)getAccessToken:(id)sender
{
    self.accessToken = nil;
    [EnterpriseAuthentication getSecurityTokenForTarget:@"sdkdemo"
        alwaysUseFreshToken:NO completionHandler:^(CentrifySDKResult *result) {
            [self getSecurityTokenHandler:result];
    }];
}
```

Notice that, in the sample application, the application name passed to the `getSecurityToken` or `getSecurityTokenForTarget:` method is `"sdkdemo"`. This call will work only if you have an application named sdkdemo in Centrify Cloud Manager created using the Generic SAML template. Centrify Cloud Services uses the SAML script specified in the Generic SAML template to generate the token.

3 Write your application using the Centrify MAS API to authenticate the user and parse the authentication token. Be sure that your call to `getSecurityToken` or `getSecurityTokenForTarget:` uses the same application name as you used in your Generic SAML template for your web service.

Note You will need to get some parameter values for the methods in the API from Cloud Manager. See the API descriptions in the chapter "Mobile Authentication Service Android Reference" or "Mobile Authentication Service iOS Reference" for details.

Prepare your application for use

1 Test your mobile application for SSO.

2 Submit your compiled and tested mobile application to Centrify at devsupport@centrify.com.

3 Provide the following information to Centrify so that Centrify can perform quality assurance testing and can include the application in the Centrify Application catalog:

- Any configuration of the SAML template in Cloud Manager needed to support your SAML interface; for example, the contents of the **URL** and **Issuer URL** fields and the script from the **Advanced** tab.
- At least one test account credential for the service that you have enabled for SSO.

Contact us

If you have any questions, comments, or feedback, please email us at devsupport@centrify.com.